Contamination risks to aquifers in the Alice Springs region

Petrol and diesel (hydrocarbons)

Underground storage tanks at service stations and bulk fuel depots may leak fuel into the surrounding soil and groundwater. If the leak is detected and stopped, and if the contamination is not too great, natural processes of bacterial breakdown will over time reduce the concentration of leaked fuel to below detectable levels. Monitoring of groundwater is carried out to ensure that contamination is not spreading. Where the contamination is widespread, active remediation is required.

Known hydrocarbon contamination events in Alice Springs	**Follow-up actions**
Railway Yards	Monitoring and Monitoring
BP Depot Whittaker Court	Remediation and monitoring
Shell Depot Anzac Hill	Monitoring
Shell Todd Driveway	Monitoring
Former Power and Water pipeline, Todd River	Contaminated soil removed
Former Coordinated Transport Depot, Nth Stuart Highway	Contaminated soil removed

Both Shell and BP were prosecuted and fined following groundwater contamination at their bulk fuel depots in Alice Springs.

Stormwater

Stormwater drains may be polluted with hydrocarbons from road runoff and by waste liquids such as detergents, degreasers, solvents, fuels, oil, paints and radiator fluids from vehicle repair workshops and other light industry e.g. dry cleaners.

Discharges to the stormwater system from air conditioner bleeds and swimming pool pump backflushing may increase groundwater salinity.

Sewage

Sewage may leak from the sewerage system where pipes are above the water table; this is a potential problem if the water table lowers with increased groundwater usage. Where sewers are below the water table, inflow of groundwater to sewers can be expected.

Septic tank effluent may pose a risk to groundwater in un-sewered areas such as rural blocks.

Infiltration of fertilisers & pesticides on ovals and gardens

Garden chemicals such as fertilisers and pesticides may infiltrate into groundwater. Power and Water Corporation carry out routine analysis of water samples from the Town Basin associated with its use for irrigation. Analysis includes testing for approximately 150 characteristics and substances including salinity, metals, phenols, herbicides, total petroleum hydrocarbon, polycyclic aromatic hydrocarbons and faecal bacteria. Overall, few contaminants have been found in Town Basin samples, apart from rare occurrences in excess of Australian drinking water guidelines of nickel, and faecal bacteria. Dieldrin has also been detected in one location, well below the drinking water guidelines at which it would be a health concern. In general, the Town Basin is too brackish for drinking water and is suitable for irrigation.

Wastewater Treatment Facility

Sewage from Alice Springs is treated in evaporation ponds to the south of the town. Some 540 ML is estimated to seep through the bottom of the evaporation ponds annually. During high rainfall events and in the cooler months of the year, waste water also overflows from the ponds into Ilparpa Swamp and from there into St Mary's Creek. Wet weather discharges to the swamp should be reduced as the

Alice Water Reuse Scheme is brought into operation, with an aim to cease dry weather overflows by December 2005 (However an application for extension of this date is currently being considered).

Alice Springs Water Reuse Scheme

This scheme will infiltrate treated waste water to an underlying aquifer for storage and later reuse in horticulture. The proposed volume is 600 ML/yr initially with a capacity to extend to 1200 ML/yr.

The Public Environment Report states that there is no groundwater flow connection between groundwater present within this shallow aquifer and the deeper aquifers further south which supply drinking water to Alice Springs.

Alice Springs Waste Disposal Site

The Alice Springs Waste Disposal Site is operated by the Alice Springs Town Council. An environment protection licence issued under the Waste Management and Pollution Control Act requires a program of water quality monitoring. Toxic and hazardous wastes as listed by the WMPC Act are not accepted for disposal.

Roe Creek Borefield

Bores are a direct route to the aquifer, therefore the land is set aside as a reserve and access is restricted.

Highway and rail accidental spillage

There is the potential for accidental spillage of fuel and other contaminants (e.g. chemicals used in mineral processing) during transport by road and rail across recharge areas.

Drag strip and Finke Desert Race (FDR) Start/Finish

Measures to minimise pollution at the Finke Desert Race Start/Finish site include: no on-site fuel storage or fuel tankers; all refuelling, maintenance and repair restricted to compacted areas; these areas, the staging lanes, start area, and first 30 metres of drag track to drain to a first flush or interceptor treatment system; fire fighting foams limited to those which do not contain toxic or environmentally persistent chemicals; and drag track preparation compounds containing toulene or similar substances are prohibited.

Noxious Industries Area (NIA) Brewer Estate

Facilities at this site include an oil loading facility and an abattoir and cattle yards.

The NIA is located 6 km south of the Roe Ck Borefield. The site is bunded to contain surface water runoff. Runoff from the bunded area is directed to evaporation ponds. The estate was located here to minimise risk to the Amadeus aquifers from direct infiltration of contaminants because it is underlain by 400m of rock that doesn't readily absorb water.

Saline contamination

Infiltration from the sewage ponds, saline discharge from the Town Basin and mobilisation of salts from shallow aquifers during high rainfall events all represent a potential for displacement of poorer quality water into the zone of drawdown of the Roe Creek borefield.

How can groundwater pollution be prevented?

- Recognising which aquifers are most at risk from pollution, and which ones are protected by overlying clay layers.
- Siting of potentially polluting industries and land uses in areas where contamination risks are low
- Monitoring of water samples from bores close to and at a distance from potential sources of contamination, to detect contaminants and to better understand groundwater flow rates
- Monitoring of sites which store or use hydrocarbons
- Response plans for pollution events such as spills